

REMARKS

Claims 1-36 are pending in the application. Claims 4, 5, 8, 33 and 34 are withdrawn from consideration. Claims 1-3, 6, 7, 9-32, 35 and 36 stand rejected. Claims 1 and 22 have been amended. No new matter has been added. Reconsideration of the application as amended is respectfully requested. The Examiner's objections and rejections are addressed below in substantially the same order as in the office action.

Claim Rejections - 35 USC § 102

Claims 1, 22 and 35-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Holmes et al (US4323991, hereinafter, "Holmes"). Claims 1 and 22 are independent.

Claims 1 and 22 have been amended to clarify features illustrated by at least FIGS. 1A and 2A of the Application.

For a claim to be anticipated by a prior art reference, the reference must show or disclose each and every feature of the claim as provided in the claim. The Applicants submit that amended independent claim 1 is not anticipated because Holmes does not show or disclose at least one feature contained in the claim.

Amended independent claim 1 recites:

An apparatus for producing seismic energy in an earth formation, comprising: a cavity in the apparatus; and a drive source in fluid communication with the cavity, the drive source configured to inject fluid under pressure into the cavity to generate pressure waves in said cavity, the cavity producing seismic waves in the earth formation in response to the pressure waves, wherein the fluid circulates from the drive source to the cavity and back to the drive source in a closed loop manner, wherein the cavity and drive source are configured to be disposed in a wellbore.

Holmes fails to teach or suggest an apparatus for producing seismic energy in an earth formation that includes a cavity and drive source configured to be disposed in a wellbore.

In contrast, Holmes discloses a mud pulse system wherein a pump and conduits located at the surface pump fluid downhole to a pulser, wherein the fluid flows from the bit and carries cuttings back to the surface. See Holmes, FIG. 1.

In addition, Holmes fails to teach, “a drive source in fluid communication with the cavity, the drive source configured to inject fluid under pressure into the cavity to generate pressure waves in said cavity, the cavity producing seismic waves in the earth formation in response to the pressure waves,” as recited by the instant claim.

Holmes discloses a pulser that has a change in flow of mud due to a vortex geometry in the pulser. The vortex causes a change in kinetic energy of mud entering the pulser and a wave of increased pressure is produced by the change in mud flow. See Holmes, col. 3, lines 60-66.

Therefore, Holmes does not disclose at least one feature of amended claim 1. Accordingly, Applicants respectfully submit that claim 1 is not anticipated by Holmes.

Claim 35 depends from claim 1 and is therefore are not anticipated by Holmes for at least the reasons presented with respect to claim 1.

Amended claim 22 includes the features similar to those of amended claim 1 discussed above and is, therefore, not anticipated by Holmes for at least the reasons presented with respect to claim 1.

Claim 36 depends from claim 22 and is therefore are not anticipated by Holmes for at least the reasons presented with respect to claim 22.

Claim Rejections - 35 USC § 103

Claims 2-3, 6-7 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes in view of Cloud (US2281751, hereinafter, “Cloud”). Claims 2-3 and 6-7 depend from amended claim 1. Claims 23-24 depend from amended claim 22.

Applicants submit that claims 2-3, 6-7 and 23-24 are not obvious in view of the cited art because the cited art fails to teach or suggest each element of the instant claims.

Cloud discloses a seismic wave generator with a pump, prime mover, stand pipe and hoses on the surface.

Accordingly, Applicants submit that Cloud fails to obviate the deficiencies of Holmes with respect to amended independent claims 1 and 22, as discussed above.

Thus, Holmes and Cloud, either alone or in any combination, do not disclose at least one feature of the base claims of claims 2-3, 6-7 and 23-24. Therefore, claims 2-3, 6-7 and 23-24 are not obvious in view of Holmes, Cloud and the prior art of record for at least this reason.

Claims 9 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes in view of Cloud and Stangroom (W09750077, hereinafter "Stangroom").

With respect to claims 9 and 25, Holmes discloses the invention as claimed except wherein the fluid is a smart fluid. Claims 9 and 25 depend from amended independent claims 1 and 22, respectively.

Stangroom is cited for disclosing the use of a smart fluid as the working fluid for an acoustic transducer.

Accordingly, Applicants submit that Stangroom fails to obviate the deficiencies of Holmes and Cloud with respect to amended independent claims 1 and 22, as discussed above.

Therefore, claims 9 and 25 are not obvious in view of Holmes, Cloud and the prior art of record for at least this reason.

Claims 10-13 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes in view of Cloud and Stangroom as applied to claim 9 above and further in view of Wassel (US62577356, hereinafter, "Wassel"). Claims 10-13 and 26-28 depend from amended independent claims 1 and 22, respectively.

Wassel discloses a steerable drill string with a guidance module that includes a magnetorheological fluid to cause forces to alter a drilling direction.

Accordingly, Applicants submit that Wassel fails to obviate the deficiencies of Holmes, Cloud and Stangroom with respect to amended independent claims 1 and 22, as discussed above.

Therefore, claims 10-13 and 26-28 are not obvious in view of Wassel, Holmes, Cloud and Stangroom the prior art of record for at least this reason.

Claims 14 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes in view of Cloud, Stangroom and Wassel as applied to claim 10 above, and further in view of Dedole (US4699240, hereinafter, "Dedole"). Claims 14 and 29 depend from amended independent claims 1 and 22, respectively.

Dedole discloses a device for generating pulsed stresses to a well through anchored shoes of a body in the well.

Accordingly, Applicants submit that Dedole fails to obviate the deficiencies of Wassel, Holmes, Cloud and Stangroom with respect to amended independent claims 1 and 22, as discussed above.

Therefore, claims 14 and 29 are not obvious in view of Dedole, Wassel, Holmes, Cloud and Stangroom the prior art of record for at least this reason.

Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes in view of Cloud, Stangroom, Wassel and Dedole as applied to claim 14 above, and further in view of Varsamis (US6366531). Claims 15-17 depend from amended independent claim 1.

Varsamis is cited for disclosing a process including activating an acoustic drive source and a sensor connected to a control unit of a drive source, wherein the sensor is configured to measure a selected parameter of interest.

Thus, Applicants submit that Varsamis fails to obviate the deficiencies of Dedole, Wassel, Holmes, Cloud and Stangroom with respect to amended independent claim 1, as discussed above.

Therefore, claims 15-17 are not obvious in view of Varsamis, Dedole, Wassel, Holmes, Cloud and Stangroom the prior art of record for at least this reason.

Claims 18 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes in view of Cloud and Dedole.

Holmes, Cloud and Dedole, either alone or in any combination, do not disclose at least one feature of the base claims of claims 18 and 32. Accordingly, Applicants respectfully submit that claims 18 and 32 are not obvious over Cloud, Dedole and the prior art of record.

Claims 19-21 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes in view of Cloud and Dedole as applied to claim 18 above, and further in view of Varsamis. Claims 19-21 and 30-31 depend from amended claims 1 and 22, respectively.

Holmes, Cloud, Dedole and Varsamis, either alone or in any combination, do not disclose at least one feature of the base claims of claims 19-21 and 30-31.

Accordingly, Applicants respectfully submit that claims 19-21 and 30-31 are not obvious over Holmes, Cloud, Dedole, Varsamis and the prior art of record for at least this reason.

For the reasons discussed, Applicants believe the claims to be in condition for allowance.

CONCLUSION

For all the foregoing reasons, Applicants submit that the application is in a condition for allowance and such an action is requested. The Commissioner, however, is authorized to charge any fee that may be due or credit any overpayment related to the filing of this paper to Deposit Account No. **13-0010 (MSM4-14966-USCP)**

Respectfully submitted,

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/Paul S. Madan/

Paul S. Madan, Reg. No. 33,011
Gunnar R. Heinisch, Reg. No. 62,227
Madan & Sriram, P.C.
2603 Augusta Drive, Suite 700
Houston, Texas 77057-5662
Telephone: (713) 266-1130
Facsimile: (713) 266-8510